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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/282,729 03/31/99 SOUTAR

A 17564-094 (DB

EXAMINER
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IM22/1202

A JASON MIRABITO  
WOLF GREENFIELD & SACKS  
FEDERAL RESERVE PLAZA  
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BOSTON MA 02210-2211

ART UNIT	PAPER NUMBER
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1762  
DATE MAILED:

12/02/99

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

**Commissioner of Patents and Trademarks**

# Office Action Summary

Application No.

09/282,729

Applicant(s)

SOUTAR ET AL.

Examiner

Brian K Talbot

Art Unit

1762

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

## Status

- 1) ☐ Responsive to communication(s) filed on 31 March 1999.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claims \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☐ All b) ☐ Some \* c) ☐ None of the CERTIFIED copies of the priority documents have been:
1. ☐ received.
2. ☐ received in Application No. (Series Code / Serial Number) \_\_\_\_\_.
3. ☐ received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. & 119(e).

## Attachment(s)

- 14) ☒ Notice of References Cited (PTO-892)
- 15) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 16) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 17) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_.
- 18) ☐ Notice of Informal Patent Application (PTO-152)
- 19) ☐ Other: \_\_\_\_\_.

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1. Claims 1-18 remain in the application.

***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Regarding claims 2,4-6,12,14 and 15, the phrase "such as" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

Claims 12 and 14 recite the limitation "the immersion coating composition. There is insufficient antecedent basis for this limitation in the claim.

Regarding claims 2,8,10 and 18, the phrase "and/or" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention or . See MPEP § 2173.05(d). In addition, the phrase is unclear whether all the components listed are included or only one of the components is included, i.e. a Markush claim.

Regarding claim 10, the term "capable" is indefinite as it is unclear what would not be considered as "capable". The Examiner suggest deleting the term to avoid confusion.

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*Claim Rejections - 35 USC § 103*

3. Claims 1,3-9 and 11-17 are rejected under 35 U.S.C. § 103 as being unpatentable over Greenberg et al. (3,993,845) in view of Donley et al. (4,171,393).

Greenberg et al. (3,993,845) teaches novel copper-silver metallic films prepared on transparent articles by chemical replacement of silver for copper. According to the method the transparent article is coated with copper by conventional methods of deposition. The copper article is then contacted by a solution comprising a silver salt, ammonia and a complexing agent which promotes replacement but which does not accelerate the oxidation of residual metallic copper in the film (see abstract). The surface of the substrate to be coated is first cleaned by conventional cleaning procedures (col. 2, line 67 - col. 3, line 2). The complexing agent utilized includes ethylenediamine tetra acetic acid (col. 3, lines 9-14). The concentration of silver nitrate is typically between 0.5 to 5.0 grams (col. 5, lines 29-35) or approximately 1 gram/l (see Examples). The concentration of complexing agent is from 1 to 8 grams/liter and depends upon the type utilized (col. 5, lines 35-45). The replacement solution is maintained in contact with the film at room temperature, i.e. 23°C, for a period of from less than one minute to five minutes (col. 5, lines 45-50) and can be in the range of 20°C to 90°C (col. 6, lines 62-65). The replacement solution is then rinsed from the article and dried with air (col. 5, lines 53-55). Thiosulfate complexing agents are not used since it has been found to accelerate the subsequent oxidation of residual copper in the film (col. 3, lines 14-17).

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Greenberg et al. (3,993,845) fails to teach that the pH of the composition is from 2-12.

While the Examiner acknowledges this fact, it is the Examiner's position that the pH of a plating composition is a well known "result effective" variable which can be optimized through routine experimentation by one skilled in the art. It has been well settled that the "optimization" of a well known "result effective" variable is deemed as a modification of the prior art without the showing of unexpected results.

Claim 10 is rejected under 35 U.S.C. § 103 as being unpatentable over Greenberg et al. (3,993,845) in view of Donley et al. (4,171,393).

Features described above in rejecting claims 1,3-9 and 11-17 over Greenberg et al. (3,993,845) in view of Donley et al. (4,171,393) are incorporated here.

Greenberg et al. (3,993,845) fails to teach a silver plating solution which is free of a reducing agent or halide ions.

Donley et al. (4,171,393) teaches an electroless plating method requiring no reducing agent in the plating bath. The pH of the bath is from 9-9.5. The thickness of the coating can vary dependent upon many factors. Buffers and other additives can be utilized.

Therefore, it would have been obvious for one skilled in the art at the time the invention was made to have modified Greenberg et al.'s (3,993,845) silver plating solution by making the plating solution free of ammonia as suggested by Donley et al.

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(4,171,393) because one skilled in the art would want to avoid the problems associated with their use as evidenced above.

Claims 2 and 18 are rejected under 35 U.S.C. § 103 as being unpatentable over Greenberg et al. (3,993,845) in view of Donley et al. (4,171,393) further in view of Applicant's admitted state of the art (specification, pg. 1, line 8 - pg. 9, lines 26).

Features described above in rejecting claims 1,3-9 and 11-17 over Greenberg et al. (3,993,845) in view of Donley et al. (4,171,393) are incorporated here.

Greenberg et al. (3,993,845) in view of Donley et al. (4,171,393) fail to teach silver plating metal conductive pads, through holes and combinations thereof with the aid of masks for covering the areas desired to remain free of silver coating.

Applicant's admitted state of the art (specification, pg. 1, line 8 - pg. 9, lines 26) teaches that it is well known to utilize silver coating on copper substrates for protecting the copper from oxidation with the use of masks.

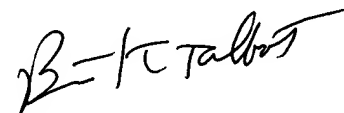
Therefore, it would have been obvious for one skilled in the art at the time the invention was made to have utilized Greenberg et al.'s (3,993,845) in view Donley et al. (4,171,393) silver replacement process for depositing silver on copper in Applicant's admitted state of the art (specification, pg. 1, line 8 - pg. 9, lines 26) printed circuit board construction because one skilled in the art would want to obtain the benefits associated with such a process, i.e. less oxidation of the copper surface as evidenced by Greenberg et al. (3,993,845).

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian K Talbot whose telephone number is (703) 305-3775. The examiner can normally be reached on Tuesday-Friday 7AM-5AM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive P Beck can be reached on (703) 308-2333. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-6078 for regular communications and (703) 305-6357 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3775.



Brian K Talbot  
Primary Examiner  
Art Unit 1762

BKT  
December 1, 1999